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EDITORIAL NOTES

GAS QUALITY

WE publish to-day the Report of the Committee of Enquiry on Gas Quality appointed by The Institution of Gas Engineers in July of last year to "enquire into and make recommendations on the most suitable quality of gas, from all aspects, for supply to consumers in Great Britain." The importance of this document is, we suggest, in inverse ratio to its length. We know something of the work which this investigation has entailed, and we congratulate the Committee on its able summary of the findings, its cogent analysis of the whole position, and the clarity of its recommendations. These recommendations, *if put into practice*—and we hope they will be put into practice—would raise the standard of gas supply. They imply considerable tightening-up of gas manufacturing and distribution practice and considerably less individual licence. The report has the merits and strength of simplicity and is coolly and closely reasoned.

No doubt one of the first findings which will be sought is that dealing with standardization of calorific value. For various reasons which we will not reiterate at the moment we have in the past suggested that limitation to three or four calorific values might be of advantage, and we have been by no means alone in this opinion. But we have always realized that calorific value is one only of an aggregate of interdependent properties which constitute "gas quality"—composition, specific gravity, combustion characteristics, as well as calorific value. The Committee states simply that it has been unable to establish that, at the moment, there is any positive benefit to the consumer or to the Gas Industry to be expected from the introduction of a very small number of closely standardized calorific values, that freedom of choice has not given cause for complaint by the consumer, that standardization of this particular property would not help the manufacturers of appliances in any material way to produce cheaper gas-consuming equipment, and that in this regard analogy with the electricity industry in its standardization of voltages does not hold. While, however, it recommends continuance of the present freedom of choice, it adds the important proviso that where inter-linkage of gas supply by undertakings is to operate, the calorific value and quality of the gas to be distributed must be consistent throughout the area of supply. In other words, "the inter-linked undertakings are to be regarded, from the point of view of the Committee's recommendations, as a single supply undertaking." Regional development will automatically result in the reduction of the number of different declared calorific values.

The recommendations of the Committee are based on consideration of calorific value, specific gravity, composition, combustion characteristics, and supply pressure. While it considers standardization of gas quality premature, it has arrived at some firm conclusions about gas quality and makes recommendations accordingly. It is in view of these recommendations that we regard the report as essentially positive; to our mind it is the reverse of a negative document. How true it is that, in general, the consumer does not complain because he tolerates such inconveniences as are, in his view, inherent in having a supply of gas. It must, we think, be agreed that it is within the power of the Industry to improve substantially its service to the consumer without the need for a vast number of new regulations and specifications and new legislation. Freedom of choice is one matter, but what satisfaction is to be gained in the fact that, for England and Wales, of the total sale of therms, 20% is not examined, and for Scotland over 22%? Why should not the practice of examination be universally adopted throughout the Industry? And it will be noted that the Committee, while recommending that undertakings remain free to declare the calorific value they believe most appropriate to their local conditions, maintains that no undertaking should allow the calorific value of the gas which it supplies to vary at any time by more than $\pm 5\%$ from the selected value. The fundamental consideration is that each undertaking, having selected and declared the calorific value best suited to its local conditions, should rigidly maintain the calorific value, specific gravity, and purity of the gas and the pressure of supply within the closest practicable limits. It is recommended that specific gravity should not vary by more than $\pm 10\%$, and that variation in pressure at the consumer's meter should not exceed 2 in. W.G., in which regard the Committee emphasizes the fact that all the evidence it has had shows that the greatest source of complaint by the consumer is excessive variation in gas pressure at his appliances. Practical steps are suggested to rectify pressure fluctuations, and it is put forward that it would be an advantage to the consumer if the minimum supply pressure were raised to 3 in. W.G.

The all-important point is that many gas undertakings do not exercise sufficient care in distributing gas of constant quality; declaration of calorific value is not a guarantee of constant quality. "There is a pressing need for a stricter control of gas quality and of distribution practice within the ambit of each undertaking." This is stated with frankness in the report; and we would repeat our contention that if the practical recommendations regarding constancy of gas quality put forward in the report became universal practice, if there was less individual licence (with declared calorific value acting as a shield, as it were, against criticism and as a false source of complacency), there would be a remarkable raising of the standard of gas supply in very many areas. In the framing of any new legislation, no doubt cognizance will be taken of the findings of this Committee on Gas Quality.

EQUITY—AND REFLECTIONS

SINCE the war the gas and electricity industries have worked together in an atmosphere of subdued harmony which it has been a pleasure to observe and which, we hope, holds great possibilities for the future. To strike any discordant note amid this major-key harmony is far from our desire or the purpose of this note, which is concerned with a recent announcement of the Ministry of Fuel and Power relating to electricity charges, and only one point in it—the payment of a minimum charge for electricity. The Ministry has made an Order as a result of which electricity undertakings will not, in future, be entitled to charge the minimum quarterly charge authorized by their Acts or Orders, but will, as an alternative, be entitled to make a minimum charge of 25s. for a twelve-month period if energy to that value is not consumed. Arrangements have been made for *pro rata* charges for shorter periods than twelve months. The Order seems to us equitable.

The announcement to which we have referred emphasizes that in order that the public utility service electricity may be available whenever it is required, electricity undertakings have had to incur substantial expenditure on generating stations, transmission lines, distributing mains, &c., the capital charges on which have to be met irrespective of the amount of electricity consumed. And it points out that the undertakings still have to meet the cost of maintaining their plant and mains in proper condition, and that every consumer, however small, involves the supply undertaking in expenditure such as meter reading and preparation and rendering and collecting of accounts. "Regarded, therefore," it continues, "from the point of view of

a public utility service which is constantly maintained for the benefit of the consumer, it is reasonable that each consumer should contribute some minimum revenue towards these costs and expenses. This has been recognized by Parliament, *which has invariably granted specific authority to electricity undertakers to make a minimum quarterly charge*." The italics are ours.

As we have said, we have no quarrel whatever with the Order, but the official announcement and the arguments advanced in it do make us think of the position of the Gas Industry in regard to this matter of the minimum charge. The reasoning in the foregoing paragraph would seem to apply with equal force to gas—and the Gas Industry is not allowed to make a minimum charge. Yet gas undertakings have had to incur substantial expenditure on gasmaking plant, distribution mains, and so on, the capital charges on which have to be met irrespective of the amount of gas consumed. The word "gas" could well be substituted for "electricity" in the announcement of the Ministry. Yet we recollect the outcry when, in 1937, the South Metropolitan Gas Company sought to establish the right to operate a compulsory two-part tariff, in principle incorporating a minimum charge. The matter, it will be remembered, went before a Joint Select Committee of both Houses. There is no doubt that at the time local authorities owning electricity undertakings were quite alarmed at the possibility of gas undertakings introducing a compulsory minimum charge. The Company was charged with flying in the face of experience, and many more pretty phrases were used by counsel on one side or the other during a hearing which occupied twelve days. We recollect the argument that no public utility could avoid supplying small consumers who could not afford to pay their full share of the costs of giving the supply, and that it was not in the public interest that these small consumers should be compelled to do so. The Select Committee was asked to think about workmen's trams and trains, though, from the other side, it was asked to bear in mind that Parliament had never suggested that the price of bread or boots should be unremunerative to a particular class of society. The while, of course, the electricity industry basked in the knowledge that Parliament, recognizing the obvious equity of the minimum charge, had invariably granted specific authority to electricity undertakers to make such a charge.

Perhaps in the glad new era after the war such inequalities in treatment will disappear and, under a Ministry whose business it will be to visualize the fuel industries as one big public utility, some of the fetters which have in the past so severely hampered gas supply will be loosened. Certain it is that, if the gas branch of fuel supply considers a minimum charge desirable, it will have a very strong argument upon which to base its claim in the above announcement of the Ministry of Fuel and Power.

THE GAP

At the time of writing the coal debate in the Commons is not concluded; we will refer to its outcome in our next issue.

The position as regards the fulfilment of the coming winter's coal requirements seems to be in the nature of a gamble involving three major factors—increased production and decreased consumption (substantial either way), and absence of any interference with transport facilities. The Minister of Fuel and Power has put forward the salient figures. Compared with the year ending with Dunkirk, when production was 230,000,000 tons, munition industries, he has told us, will require 25% more coal than they did two years ago, electricity 40%, gas 15% (*cf.* electricity), and railways 13%. The deficit—allowing for estimated use of low-grade fuel from colliery dumps, production of coal from open-cast workings, and the running-down of public utility undertakings' stocks, surely a precarious measure—at present is about 11,000,000 tons. Regarding domestic rationing, Major Lloyd George has said he is satisfied that the necessary saving can be made by voluntary means, but added that preparations for a rationing scheme are such that compulsory rationing could be put into operation at short notice. He pointed with gratification to what has happened in one of our biggest and most important manufacturing cities, where the consumption of gas involves 1,000,000 tons of coal a year. Before the fuel campaign, 17% more gas was being used than in the previous year; it has been reduced, since the campaign, by 16½%. He expressed his conviction, too, that in many industries—in which the coal consumption is some 140,000,000 tons a year—substantial economies could be made, and that if everybody concerned put his back into it, we should wipe out the deficit of 11,000,000 tons. Yet, we had the statement from the Minister that "to secure the measure of economy in domestic use of gas and electricity, restrictions would be imposed by Order on consumption."

Turning to production, note will doubtless have been taken of the assertions made during the debate that the coal required to meet the needs of gas and electricity for domestic consumers for a year on the old rate of consumption represented only 152 hours' mining output, that if everybody succeeded in cutting down domestic consumption of gas and electricity by 25% it would mean a saving of one week's output in the pits, that examination of a large number of collieries had shown that if a 15% minority of workers were working as many shifts as the 85% majority the output of the collieries would be increased by 4%, implying 5,000,000 tons of coal in a year. The while there is the clamant cry that it is impossible to increase the number of skilled coal-hewers at speed except from the armed forces.

Personal

Arbroath Town Council has appointed Mr. CHARLES W. DALTON as Gas Manager in succession to Mr. D. MORTON, who has resigned owing to ill-health. Receiving his practical training at Dundee Gas-Works, Mr. Dalton was later appointed technical assistant at Arbroath Gas-Works, becoming Assistant Manager in 1940.

1942 "Journal" Directory

Page 40. LEYLAND. J. Castle, *E. M. & S.*, *vice* F. Elliott, retired.
„ 54. PORTHCAWL. W. R. Taylor, *E. & M.*, *vice* D. E. West.

Letters to the Editor

Standardized Carbonizing Plant

DEAR SIR,—We, the undersigned, being draughtsmen in a large firm of carbonizing plant designers, feel that the time for "austerity" carbonizing plants has arrived.

It is plain to us that under the present system large quantities of material and labour are wasted by the personal whims of gas engineers. Such whims are, in the majority of cases, totally irrelevant to efficient gasmaking and entail unnecessary constructional costs.

A series of standardized plants for various output requirements would reduce drawing office and erectional time to a minimum, thus releasing skilled men for other work.

35, Mount Road,
Bexleyheath, Kent.
Sept. 28, 1942.

Yours faithfully,
L. H. BALDWIN.
E. W. LEWIS.

Discussion on Mr. Powdrill's Paper

DEAR SIR,—In your report ("JOURNAL" of Sept. 30) of the discussion on Mr. Powdrill's Paper at the Wales and Monmouthshire Meeting, my remarks appear to have been misquoted. As reported, they do not represent what I said.

I consider that the problem has hitherto been tackled downwards and should now be tackled from the bottom upwards. In other words, it is easier to get unanimity of policy starting with small geographical groups and enlarging these as time goes on.

It seems to me that most efforts have been made along the lines of trying to get a whole district in agreement, and this has so far proved impractical.

Yours faithfully,
K. E. TIDDY,
Manager and Secretary.

Carmarthen Gas Company,
Carmarthen.
Oct. 3, 1942.

The Annual General Meeting of members of the British Standards Institution will be held at the Institution of Mechanical Engineers, Storey's Gate, St. James's Park, London, S.W. 1, on Thursday, Oct. 22, at 12.15 p.m., at which Sir Percy Ashley, K.B.E., C.B., Chairman, will preside.

Birmingham Fuel Economy Exhibition

Birmingham's Fuel Exhibition in support of the Ministry of Fuel and Power's Campaign was held at the Civic Centre from Sept. 21 to Oct. 3.

Public interest in the exhibition was assured by the construction of a full-size exact model of the typical mine working, consisting of a correctly timbered adit complete with rails, tubs, safety lighting, and leading to a 6 ft. coal face, showing undercutting and drilling ready for shot firing. To make the illusion complete, there was a pit pony with protective head harness, and, at the entrance of the exhibition, pithead winding gear. A large notice showed the name as "Murdoch Jubilee Pit." The working was constructed in four days by the City of Birmingham Gas Department with the assistance of an official from a local colliery to make certain that the timbering, &c., was in accordance with regulations.

The Department also staged a 60-ft. exhibit appealing for economy in home and factory. Typical domestic apparatus was shown with consumptions and economy hints, such as a well-stocked oven, and a gas furnace was displayed with information with regard to adjustment of flames and dampers.

Comprehensive exhibits were staged by the Electric Supply Undertaking, the Birmingham Coal Merchants' Association, and by local firms. Products of war factories for which fuel is needed included a 25-pounder gun and the new 6-pounder anti-tank gun, a revolving gun-turret from a bomber, a mobile searchlight, and many others.

The exhibition was opened by Major Gwilym Lloyd George, and daily speakers included Commander Stephen King-Hall.

Long Service Awards

Eleven of the staff and workpeople of West's Gas Improvement Company, Ltd., were presented with gold watches and long service certificates by Sir Frederick J. West, at an interesting ceremony which took place in the works canteen on Sept. 30.

One member of the staff, who had completed 50 years' service, was presented with an illuminated address and a cheque from the Directors; five employees, including the Chief Engineer, Mr. T. A. Tomlinson, received gold watches for 40 years', and five long service certificates in recognition of 25 years' service. The other recipients were two foremen, six workmen, and a member of the technical staff.

The presentations were made in the presence of most of the officials of the Company. Since the inception of this scheme for the recognition of long service to the Company, which was inaugurated 17 years ago, 31 gold watches and 133 certificates have been awarded.

Meetings of the London and Counties Coke Association will be held as follows on Oct. 19, at Gas Industry House: Finance Committee, 10.30 a.m.; Executive Committee, 11.15 a.m.; Central Committee, 1.30 p.m.

The Ministry of Fuel and Power has agreed that the gas sent out by the Stalybridge Corporation Gas Department from Oct. 1 shall be of a calorific value of 480 B.Th.U., a reduction from 500 BTh.U.

The Next Meeting of the Eastern District of the Southern Association of Gas Engineers and Managers will be held at Gas Industry House, at 2.30 p.m., on Wednesday, Oct. 14, when Mr. E. L. Nicholas, Chief Engineer and Managing Director, Guildford Gas Light and Coke Company, in conjunction with Mr. E. A. Smith, Distribution Engineer of the same Company, will open a discussion entitled "Organizing a Fuel Economy Exhibition."

There was little Prospect of increasing the gas output during the coming year, said Mr. Francis J. Dickens, Chairman, at the half-yearly meeting in Dublin of the Alliance and Dublin Consumers' Gas Company. Their chief difficulty was supplies of gas coals, which still remained inadequate. At present the output roughly was 60% of a year ago, but it was expected that it would fall. Referring to a recent increase of 6d. per therm in the price of gas in the city, the Chairman said that that was not sufficient to rectify the present adverse conditions, and that it seemed virtually certain that a further increase must be contemplated. A dividend of £5% p.a., less income-tax, on the Ordinary Consolidated Stock was passed. The price of gas in Dublin is now 17.8d. per therm, and supplies are strictly rationed.

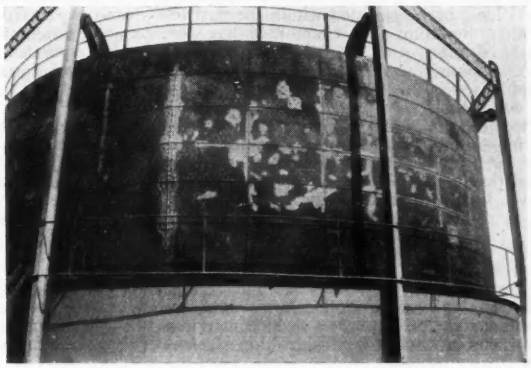
The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.

Bomb-Damaged Gasholder Quickly Repaired

An Instance of Co-operation

A stray enemy bomber engaged on a daylight nuisance raid emerged from low cloud "somewhere over England" and found itself, by chance, close to a small gas-works. So tempting a target was not to be passed by, and the Luftwaffe's lone representative made a reconnaissance of the target from a height of about 200 ft. After a preliminary run-up, he released a stick of 100-lb. H.E's. and promptly made off into the clouds again. Blast, debris, and bomb splinters split a main seam of the holder for a depth of five plates and riddled the crown and side-sheeting with scores of holes, one splinter passing completely through the holder, while another punctured the water tank. The gas ignited, but the fire soon died out as the holder grounded, and though the fire brigade were promptly on the scene their services were not required.

The arrangement of the works made it impossible to isolate the damaged holder and supply the district from alternative storage. In any event, the other holders being interconnected with the main holder, all the gas on the works escaped within a few minutes, so considerable were the leaks.



The Holder at Work Again.

So for the first time in the history of the undertaking the district was deprived of gas, and the management were faced with a very ticklish repair problem with limited staff and facilities at their disposal.

An S.O.S. was sent out to a neighbouring undertaking, and a fully equipped repair gang was put at the disposal of the "blitzed" works. The difficulty, however, was to raise the holder sufficiently to bring the damaged sections out of the tank to effect the necessary repairs. It would have taken some time to obtain a compressor—though another undertaking in the same county offered one—to lift the holder by air pressure.

It was therefore decided to attempt to raise the holder by gas pressure. Accordingly the carbonizing plant, which was fortunately undamaged save for the roof being blown off the retort house, was pushed to maximum capacity, a spare bed of retorts being quickly put into commission. Carbonizing periods were substantially reduced, and the greatest output of which the manufacturing plant was capable was put into the damaged holder with no other assistance than the ordinary exhauster.

The holes in the crown had, of course, previously been patched; and as the holder slowly lifted from the tank the splits in the side sheeting were temporarily plugged with wooden wedges and clay as soon as they came into sight. The repair gang had brought oxy-acetylene cutting apparatus with them, and the new plates were cut to the required sizes and bored for the bolts in advance.

Then, as a sufficient area of the sheeting was exposed for a new plate to be affixed, the temporary plugs were whipped out and the new plates bolted into position, the repair gang working with the gas blowing out into their faces. Some of the men were, indeed, affected by carbon monoxide, but, fortunately, none seriously, though the foreman in charge had to be resuscitated on one occasion with oxygen.

With the production plant working at full capacity the holder gradually emerged from the tank, and patch after patch was bolted into place, jacks being used to force the seams to meet, until the holder was fully inflated and the lowest hole effectively sealed. The holder was gas-tight again; and though there was left an uncomfortable-looking bulge on the damaged side, this was found not to affect the operation of the holder.

The whole operation took four days, and the accompanying photograph gives some idea of the amount of work involved. This difficult repair job, executed so promptly and effectively, is a fine tribute to the enterprise of the men concerned and the ready co-operation of the neighbouring undertaking.

GAS QUALITY

REPORT OF THE COMMITTEE OF ENQUIRY ON GAS QUALITY*

THE Committee of Enquiry on Gas Quality was appointed by the Council of The Institution of Gas Engineers on July 30, 1941, "To enquire into and make recommendations on the most suitable quality of gas, from all aspects, for supply to consumers in Great Britain."

In submitting this Report the Committee has in mind that the preparation of more detailed recommendations for the standardization of gas quality must be largely dependent upon higher policy in respect of national and regional planning of the fuel industries and more particularly of the Gas Industry.

Evidence

Plan of the Enquiry.

Standardization of gas quality, often loosely identified with standardization of calorific value, has been a subject of discussion for a long time, and a survey of published literature, prepared for the Committee, shows that over 60 papers or contributions dealing with the subject have been presented within the past few years. Apart from published literature, the Committee has obtained a considerable amount of information by means of questionnaires, correspondence, and discussions, and it wishes to place on record its appreciation of the help given in this way by the staffs of many gas undertakings and contracting firms.

Since both policy and technique in the Gas Industry are continually evolving, any Report that the Committee might present must be, in a sense, of a provisional nature. With this in mind, the Committee agreed that its enquiry should take no account of matters of policy not yet finally determined, or of new developments in technique unlikely to attain general commercial application within the next ten years.

Meaning of Gas Quality.

By "gas quality" is understood the aggregate of interdependent properties—*e.g.*, composition, calorific value, specific gravity, combustion characteristics, impurities—which determine the performance of a gas when burnt. In any consideration of such performance a further factor, that of pressure of gas supply, must be included, although it cannot be strictly regarded as constituting part of the quality of the gas.

The Case for Standardization.

The Committee, at the outset, agreed that it was necessary to determine if there was a sound case for some degree of standardization of gas quality. The Committee is of the opinion that the idea of standardization, *per se*, has no intrinsic merit, and that consequently the value of any general standardization must be positive either to the consumer, the supplier or the nation. In regard to gas quality, the views of the consumer are regarded by the Committee as being of vital importance, and the line of approach has, therefore, been to obtain such views through the men actually engaged in maintaining the consumer's satisfaction.

All the evidence before the Committee shows clearly that the consumer is not interested in the exact quality of the gas he receives, provided it is available at all times in a form in which it will give him constant and reproducible behaviour in his appliance.

So far as calorific value is concerned, variations within the limits of tolerance of his appliances are of no concern to the consumer. During the last two years a considerable number of gas undertakings have changed their declared calorific value, the change in many cases having been a reduction of some 25 B.Th.U. per cu.ft. The general experience obtained as a result of these changes is that consumers have given no indication of having noticed the change, that there has been no shortage of gas supply, and that, except for a certain number of water heaters, it has not been necessary to make any adjustments to appliances, which are in general tolerant to changes up to $\pm$ 25 B.Th.U. per cu.ft. (Such changes in calorific value may be accompanied by some change in specific gravity, to which reference is made below.)

Taking a cross-section of the Industry, it is therefore apparent that, so far as calorific value alone is concerned, the freedom of choice allowed by the Gas Regulation Act, 1920, has not given cause for complaint by the consumer and, further, that small variations of calorific value within reasonable limits are not noticed by him.

The consumer would, however, be interested in standardization of gas quality if it led to a reduction in his expenses consequent upon either economies within the Industry or a reduction in the price of gas appliances.

Potential Economies resulting from Standardization.

Economies within the Gas Industry resulting from standardization of gas quality might be looked for in such matters as opportunity of inter-linkage of distribution systems and saving in standby plant. In the present indefinite state of future planning, the Committee is unable to place any figure on such potential economies.

Nor does the Committee find, over wide limits, that gas of any particular calorific value is generally the most economical to supply, since local conditions (*e.g.* type of coal, type of carbonizing plant, condition of distribution system) play so large a part in determining the economic picture.

From the point of view of appliances, there exists a widespread belief within the Industry that the limitation of the declared calorific value to 3 or 4 standard values would lead to appreciable economies in the cost of production of consumers' appliances. The Committee has examined evidence submitted on this point by the appliance manufacturers, which shows that any such advantage would, in fact, be negligible, since, even with standardization of a limited number of calorific values, the present range of burners could not, in fact, be materially reduced.

The Committee has, therefore, been unable to establish that, at the moment, there is any positive benefit to the consumer or to the Gas Industry to be expected from the introduction of a very small number of closely-standardized gas qualities, although it is admitted that, in the eyes of the layman, such a step might have a certain amount of prestige value for the Gas Industry. Surprise may be expressed at this conclusion, and the electricity industry may be held up as an example of the value of strict standardization. There is, however, a simple explanation why gas and electricity are not analogous in this respect. Gas appliances can usually be adjusted to suit a wide range of gas qualities, whereas an electrical appliance (except where specially equipped with expensive resistances) will only operate on a closely-standardized voltage. The standardization of voltages has led to mass production of standardized appliances for one voltage, and by this simplification it has been possible to reduce the price of electrical appliances considerably.

Stricter Control of Gas Quality.

Notwithstanding the conclusion arrived at in the preceding paragraph, the Committee has evidence that many gas undertakings do not exercise sufficient care in distributing gas of constant quality. The declaration of a calorific value is regarded by the consumer as a guarantee of constant quality, whereas, in fact, the supply of gas of a given declared calorific value leaves too wide an opportunity for variation in gas quality. Except for complaints of variations in supply pressure and of the smell of sulphur compounds, the consumer is very tolerant of the service provided. This is, however, no ground for complacency, since it must be recognized that, in general, the consumer does not complain because he tolerates such inconveniences as are, in his view, inherent in having a supply of gas.

It is within the power of the Industry to improve substantially its service to the consumer without the need for any detailed specification or any new legislation.

In this connexion evidence has been obtained of the number of gas undertakings having no official Gas Examiner. The Committee finds that, for England and Wales, of the total therms sold (Board of Trade Returns for 1938) 20% were not examined, and this covered 20.4% of the total number of consumers. The corresponding figures for Scotland were 22.4% and 22.5% respectively.

Factors Determining Gas Quality.

The Committee has given consideration to each of the main factors which determine the performance of gas in combustion, and it desires to make the following observations thereon:

(a) *Calorific Value.*

It may be asked why, of the various properties which influence the performance of gas in combustion, the calorific value has generally been selected for so much attention and possible standardization. The answer would appear to be that, in order to ensure that the consumer receives the heat for which he pays, all statutory undertakings and certain non-statutory undertakings must declare a calorific value and that, while in the Gas Regulation Act, 1920, freedom of choice of calorific value was allowed, the only other provisions in the Act in respect of gas quality were (i) freedom from hydrogen sulphide, and (ii) minimum supply pressure of 2 in. W.G.

Of all the declarations of calorific value made by gas undertakings, 97% have lain between 400–500 B.Th.U. per cu.ft., representing a proportion of total gas sold of a similar order. The Committee has considered the question as to the desirability of recommending that all declared calorific values should be between certain specified limits, but it finds the available evidence insufficiently conclusive to be able to make any such recommendation. The Committee, however, while recommending that undertakings remain free to declare the calorific value most appropriate to their local conditions, suggests that no undertaking should allow the calorific value of the gas which it supplies to vary at any time by more than $\pm$ 5% from its selected value.

* I.G.E. Communication No. 249.

The Committee places on record its view that it is very improbable that one declared calorific value will be found to be the most suitable throughout the country. Such factors as the nature of the coal-fields indigenous to the different districts and the availability of supplies of coke oven gas are two typical examples which support this view.

(b) *Specific Gravity.*

At a given pressure the amount of energy which can be generated by a gas burner is determined by the specific gravity and calorific value of the gas. Usually a fall in calorific value is accompanied by an increase in specific gravity. Such a change will decrease the thermal output of the burner, unless the supply pressure is increased. A very low specific gravity combined with a high calorific value may with certain appliances make it difficult to obtain sufficient primary air injection.

Changes in specific gravity are not noticed by consumers, except in so far as they affect the performance of an appliance as indicated above. The Committee suggests that satisfaction to the consumer would be ensured if the specific gravity of the gas he receives were maintained within ± 10% of the normal figure for his supply undertaking.

(c) *Composition.*

Assuming constant performance in his appliances, the composition of the gas is of no interest to the consumer, except in regard to impurities, particularly sulphur and, to a less extent, gum.

(i) *Sulphur.*—The removal of organic sulphur compounds from town gas to the greatest extent possible commercially is of the utmost importance to the Gas Industry from a prestige standpoint, quite apart from its material value in reducing corrosion troubles and maintenance costs.

The Committee has not considered this matter in greater detail, since another Committee of Enquiry of the Institution is in existence to examine and report upon the whole question of sulphur removal from town gas.

(ii) *Gum.*—Troubles due to gum deposits in distribution systems and appliances are still met with, but the methods for their prevention are known and should be applied.

(d) *Combustion Characteristics.*

By combustion characteristics are understood all those properties of a gas which determine its performance when burnt in domestic or industrial burners, whether of the aerated or non-aerated type. In the latter types of burner combustion characteristics have less importance in relation to performance, since the combustion is independent of the maintenance of an optimum gas/air ratio.

The Aeration Test Burner has been devised as a means of assessing combustion characteristics in relation to aerated burners. Opinions expressed by those who have used the A.T. Burner differ as to its practical usefulness. It is known, for example, that two gases having the same A.T.B. Number do not necessarily behave alike in a given appliance burner; nor is it possible to calculate the A.T.B. Number of a town gas from its composition, since the property is not additive.

The Wobbe Index $\frac{C.V.}{\sqrt{Sp.gr.}}$ gives a measure of thermal input, and a recording device for this Index might form a convenient means of control in the hands of the works engineer.

The Committee considers, however, that there is not sufficient knowledge available at present to enable the A.T.B. Number, Wobbe Index, or any other similar criterion, to be used in a formal specification of gas quality.

(e) *Supply Pressure.*

While supply pressure cannot be included as part of gas quality, the maintenance of adequate and constant pressure is essential to satisfactory performance of appliances. The Committee has been impressed by the evidence that variation in gas pressure is a constant and major source of complaint by the consumer, and is the factor which is more quickly noticed and is less tolerated by him than any other variation. This leads to the conclusion that present distribution practice is generally less satisfactory than present gas manufacture practice, and requires much closer attention in the future than hitherto.

Steps should be taken by gas undertakings to rectify supply pressure fluctuations by either—

(i) Enlargement or improvement of the distribution system (*e.g.*, installation of district governors),

or

(ii) The installation of governors at individual meters, except where the carcassing is inadequate, in which case governing at individual appliances would be better.

The Committee suggests that it would be an advantage to the consumer if the minimum supply pressure were raised to 3 in. W.G. and that the variation in pressure at the consumer's meter should not be allowed to exceed 2 in. W.G.

Maintenance of Gas Appliances.

The necessity for maintenance (including adjustment) of appliances is a nuisance to consumers and a considerable expense to undertakings. The Committee is convinced that with the supply of gas of unvarying quality, sensibly constant in calorific value, specific gravity, and pressure of supply, and free from objectionable impurities, the need for a large proportion of present-day maintenance would automatically disappear, leaving only that part which is necessary to combat fair wear and tear of appliances, together with perhaps the cleaning of burner ports from dust entering them from external sources.

Conclusions and Recommendations

The Committee of Enquiry on Gas Quality is impressed by the fact that the Gas Industry is at a critical stage in its evolution. This applies to all branches of the Industry, and the Committee is conscious of the fact that premature or ill-considered standardization of any one of the factors which play their part in the balance of the Industry, for example, gas quality, might retard progress. The Committee nevertheless has reached certain conclusions on the subject of gas quality which it desires to put forward in the form of the following recommendations:

1. The Committee recommends that the present freedom of choice of declared calorific value be maintained in accordance with the provisions of the Gas Regulation Act, 1920. It is appreciated, of course, that where inter-linkage of gas supply by undertakings is to operate, the calorific value and quality of the gas to be distributed must be made consistent throughout the area of supply. In other words the interlinked undertakings are to be regarded, from the point of view of the Committee's recommendations, as a single supply undertaking.
2. The Committee considers that there is a pressing need for a stricter control of gas quality and of distribution practice within the ambit of each undertaking.
3. The Committee did not feel it desirable in this Report to suggest any detailed specification of gas quality, but it has in mind that each undertaking, having selected and declared the calorific value best suited to its local conditions, should rigidly maintain the calorific value, specific gravity, and purity of the gas and the pressure of supply within the closest practicable limits.

   In this connexion the following tolerances are suggested as being attainable in practice and satisfactory to the consumer:

Calorific value	± 5%
Specific gravity	± 10%
Variation in pressure at consumer's meter not to exceed 2 in. W.G.	

4. The Committee desires to emphasize the fact that the evidence before it shows that the greatest source of complaint by the consumer is excessive variation in gas pressure at his appliances.
5. The Committee is disturbed to find that some 20% of the total quantity of therms sold is not subject to examination by a Gas Examiner, and it desires to recommend that the practice of examination be universally adopted throughout the Industry.

GEORGE DIXON (*Chairman*).
E. CROWTHER.
T. C. FINLAYSON.

[The Report concluded by an Appendix giving a list of documents considered by the Committee.]

Ministry of Fuel and Power Announcement

The Minister of Fuel and Power has made the first General Directions under the Control of Fuel Order. There are three of these Directions, entitled respectively, General Directions (Central Heating and Hot Water Plants) Nos. 1 and 2, and General Direction (Standard of Lighting) No. 1.

The two Directions relating to central heating and hot water plants cover hand-fired and mechanically operated plants.

These Directions, which came into operation on Oct. 1, provide as follows: No fuel is to be consumed in any central heating plant used for heating any controlled premises until after Oct. 31, except under written permit from the Minister or the Regional Controller of Fuel and Power for the area in which the premises are situate. When the same central plant is used both for heating and for providing hot water for use, the foregoing prohibition is relaxed to the extent necessary for the provision of the hot water only. As from Oct. 1 there will be a general prohibition of the starting-up or replenishing of central heating or hot water plants, except under permit, between the hours of 9.30 p.m. and 6 a.m. This prohibition will not apply in the case of office premises where the great majority of the indoor staff are on duty at night. The "controlled premises" to which these two Directions apply do not include premises used wholly or mainly for industrial purposes, or hospitals and similar institutions, or premises used solely for residential purposes which contain not more than 10 rooms furnished and ready for use as living or bedrooms. All other premises are affected by the Directions, including blocks of flats and private houses containing more than 10 furnished rooms,

Permits for relaxation of the provisions of the Directions can be granted generally or in respect of individual premises or classes of premises. This provision will enable prompt account to be taken of any abnormal weather conditions, whether local or general, and arrangements have been made for broadcasting notifications of such permits at short notice.

The third General Direction, which also came into operation on Oct. 1, prescribes maximum standards for the interior lighting of shops, hotels, restaurants, places of entertainment or sport, and meeting-places.

NO COMPLAINTS FROM THE DISTRICT*

By

L. W. ANDREW, B.A., B.Sc.

AT this moment a technical Paper must open with an apology if it deals with a subject primarily of post-war value. It will be justified if it provokes a discussion which will help us all to avoid any suggestion of complacency when we are considering the position of gas after the war. We must know our strength, our very real contribution to a better post-war world; but equally we must not lose sight of our past and present weaknesses if these are to be eliminated in the future.

It seems probable that in the past there were three different schools of thought about the domestic use of gas, representing: What gas should do in the home; what the Gas Industry thinks gas should do in the home; what gas actually does do in the home. For some time before the war some of us doubted if sufficient co-operation existed between laboratory and district to ensure that the best possible service was given by gas. There is a possibility of becoming remote in a laboratory and to become divorced to some extent from conditions on the district, and for this reason I was fortunate in 1939 to spend about three months on the district with a completely free hand to see and do what I chose. The object of the visit was to check the technical performance of space heaters, the suitability of existing appliances, and the extent to which they were being used properly and giving satisfaction. The problem of maintenance was regarded as of first importance. It proved a valuable opportunity to strengthen personal contact with district personnel, and the discussion with them was of the greatest possible value to the survey. Many of the findings apply only to space-heating appliances, but several general conclusions are of interest whatever type of appliance is burning gas. It should also be remembered that the space-heating load is potentially as large as that of the total other fuel load in a normal home.

It was decided to confine all visits to consumers who had not complained about their appliances. It is common experience that most people do not bother to complain, but does this indicate a positive satisfaction, or acceptance of what they consider to be the inevitable characteristics of gas service? The laboratories are familiar, possibly too familiar, with complaints from the district, but these represent a very small proportion of appliances out—for example, the complaints on a cooker of a half million issue are of the order of a 100 or so per annum. Is this situation due to perfection on the part of the appliance, the fitter, and the maintenance men, or partly due to ignorance of the consumer and his apathy, or does he not use some of the appliances? If we assume that lack of complaint is lack of trouble then we may be living in a fools' paradise. It also means that in the laboratory there is lack of full information for development and improvement.

It is important to distinguish between the professional complainer and the ordinary person. The former may be a nuisance and a liability, whereas criticism from the ordinary person is an important asset. To obtain a right perspective it is necessary not to consider only the complaints, but also to find out if the user has genuine grounds for complaint or dissatisfaction and what he really thinks of gas as a service in the home. It is not enough to say that complaints are only 0.1% and therefore all is well. The professional complainer does often give a lead to trouble if he is followed up carefully, and we must decide the real value of the complaint. I would like to quote one example: A user complained bitterly of burner teats breaking in a particular fire. Personal investigation convinced me that the user was breaking these teats as fast as we were replacing them in the hope finally of getting the fire removed without having paid any money for it. This man had cause for complaint, not because the appliance was defective, but because he had been persuaded to install an appliance for which he could not afford to pay the hire purchase terms, let alone use gas in it.

During the three months' visit about 250 productive calls were made, about 70% of total addresses, and the calls ranged from the slums of Tidal Basin and Holloway to the expensive houses of Hampstead and Virginia Water. The majority visited were auto. consumers or ordinary consumers in property of a value below £1,000.

Pre-War

Heating the living room.—Rich and poor hated the dirt and work of the coal fire and fully realized the objections to the coal fire to a most marked degree, but about 90% in each class used them. The "cosiness" and running cost of the coal fire were the main recommendations, but about a quarter specifically disliked a gas or electric fire on grounds of "stuffiness," "headache," "sore eyes," "cold back," &c. It was evident that the strongest objection to a gas fire came from those who had never used one in a living room and were only familiar with intermittent heating by gas.

Heating the dining room.—A surprising number of homes, over half for all classes, have only a solid fuel fire. Those who had gas fires were very satisfied unless they had under-estimated the running cost.

Heating the hall.—Nearly all the rich had some heating and regarded it as essential; most of the middle class felt the need for some heating, but feared the cost; most of the poor did not feel any need for it. Only a few had gas radiators, but each of these used them sensibly, and was very enthusiastic and satisfied on performance obtained and cost of operation.

Background heating.—Apart from such heating in the hall, little understanding of this type of heating was shown. It was most marked that those with background heaters were delighted with them, and those without them were suspicious about the cost of running and extra comfort gained.

Flueless fires.—These, generally speaking, were widely and intelligently used. Isolated complaints were due to fitting them in very small and inadequately ventilated rooms. These complaints had not been put forward officially.

Solid fuel kitchen ranges.—A surprising number of these were seen. Without exception they were disliked, particularly because of appearance and dirt—and they were little used.

Usage of gas fires.—The ordinary consumer used these to a reasonable extent, but many auto. consumers with low incomes used them primarily as a method of filling up the fireplace and could not afford to use them. In several small bedrooms it would not have been possible to light the fire with safety because of adjacent furniture.

Defects accepted.—The general condition of appliances was reasonable, but several users accepted as inevitable such defects as broken radiants, unpainted visible connexions, unreliable self-ignition, noise, and even smell.

Defects not realized.—It was clear that few users appreciated exactly what a correctly set gas appliance looked like and what performance it could give. Several fires showed a performance obviously sub-normal—*e.g.*, fires dull, due to under-aeration or to sucking down of the flames through bad luting, under-gassing, and badly discoloured radiants. Many reflectors on portable fires were so dirty that they had obviously never been cleaned or regarded as important.

Misconception and ignorance.—All classes had only the vaguest idea about the actual cost of providing a given service by gas or any other fuel, and knew even less about the relative cost of gas and other fuels. The whole question of cost was clearly of the greatest importance to the majority of users.

The auto. consumers had a good idea of how long a penny lasted when put in the meter and often expressed themselves crudely on this point, but they had no idea of comparing a pennyworth of gas with a pennyworth of other fuel. The following ideas were prevalent:

1. Gas used through an auto. meter was judged by the money put in—the user was unimpressed by any rebate received when the collector came, and also by the fact that a part of the money put in might go in meter rent and hire of appliances.
2. Money spent on solid fuel was regarded as inevitable and not begrudged in the same way as the money that went into the meter.
3. The money put into the electric meter for the small amount of energy used in lighting and wireless was compared with the money put into the gas meter for the relatively large heat energy needed for cooking, laundry, &c. Strong feeling resulted about how expensive gas was compared with electricity.
4. Even medium income ordinary consumers had no idea of the relative costs of gas and electricity. A 1d. a unit always sounded much cheaper than 1s. a therm, or a ½d. a unit than 4d. per therm.
5. The gas two-part tariff was often misunderstood and the standing charge compared unfavourably with the electric standing charge.
6. There was a desire to know more about the annual running cost of using a gas appliance to give a definite service.
7. There was a tendency for an auto. consumer to be misled by advertisements of running cost which applied to the ordinary consumer.
8. There was a tendency for a poor consumer to buy an appliance on the basis of appearance, and not to consider carefully if he could afford both to hire purchase the appliance and to burn gas in it.

There were, however, two marked features—an inherent distrust of the cost of electric heating and a growing appreciation of the value of a portable gas heater for economical heating.

On the other hand, there remained a definite glamour attached to electricity, especially among the users of gas, who often had vague friends who apparently obtained remarkable results at a very low cost with their electric appliances.

All the time I could not get away from the impression that few people appreciated the true cost position of a given service by coal, gas, and electricity.

(*To be continued*)

* Paper to the London and Southern District Junior Gas Association, Sept. 25.

Ministry of Fuel and Power

(Gas and Electricity Division: Scunthorpe Gas Enquiry)

AN enquiry was held in London on Sept. 9 into an application by the Scunthorpe Corporation under the Gas Regulation Acts for sanction to an agreement to take a supply of coke oven gas. The Inspector was Mr. G. S. W. Marlow (Barrister-at-Law). There was no opposition to the proposal to take a supply of coke oven gas for distribution in Scunthorpe, but Mr. C. J. Jackson (Parliamentary Agent) appeared for the National Association of Local Government Officers on the question of compensation to officers and employees of the Scunthorpe Corporation who might be displaced by the scheme. Mr. J. F. Auld (Town Clerk) appeared for the Scunthorpe Corporation, and was supported by Mr. J. F. Simpson (Gas Engineer) and Mr. George Dixon (Engineer and Manager, City of Nottingham Gas Department), who has been advising the Scunthorpe Corporation.

Mr. JACKSON, for the N.A.L.G.O., asked that compensation should be paid, in accordance with the provisions of the various general Acts of Parliament which had dealt with this matter after consideration and reconsideration from time to time, to "the officers and servants" of the Scunthorpe Corporation who might be affected by this scheme.

The INSPECTOR said he gathered from the correspondence that the Corporation did not object to the payment of compensation to the officers of the Corporation who might be affected, in the manner suggested, but that they did object to the introduction of the words "and servants." He had been wondering where the distinction was between an "officer" and a "servant," and asked if the Courts had ever been called upon to decide the point.

Mr. AULD, for the Scunthorpe Corporation, said there had been a case in which the Courts had been asked to decide whether a messenger in a local authority's office was an "officer," and that was the only case he knew. Continuing, he said the short point in this case was that from the start the Corporation had never objected to paying compensation to their officers, should any be affected by the proposals of the Draft Order, but they objected to the inclusion of "servants" because that might include workmen. It was the view of the Corporation that in this case the N.A.L.G.O. was appealing for the workmen but, having been personally a member of N.A.L.G.O. ever since its inception, he had always understood that their objects were to protect the interests of administrative, professional, technical and clerical staffs, and none of the workmen were members of N.A.L.G.O., because they could not be. On the other hand, there had been concluded an agreement between the employers and workmen in the Gas Industry, through the National Joint Industrial Joint Council for the Industry, dated April, 1930, which dealt with compensation for workmen whose interests were prejudicially affected by any amalgamation or other scheme. Therefore, he was willing to agree to compensation for officers on the terms of the Local Government Act of 1933, but if that Act were applied to the workmen it would be impossible to go on with the proposed scheme, which, however, was of great importance, as it would save 6,000 tons of coal per annum. If the Compensation Clauses of the Local Government Act were applied to the workmen, it would mean the Corporation would have to meet an impossible expenditure. Eventually six men would be displaced, and under the proposal of N.A.L.G.O. the compensation paid to those men would be £784 per annum. On the other hand, under the agreement by the employers and men on the National Joint Industrial Council for the Gas Industry the compensation would be £719 *in all*. What was the good of having a Joint Industrial Council for the Industry if the agreements it arrived at were to be set aside in this manner?

Mr. JACKSON said the N.A.L.G.O. could not accept a differentiation between "officers" and "servants," and said the point had already arisen as to the position of the staff in the accounting departments of local authorities under the wording of the compensation clauses of the Local Government Act of 1933.

The INSPECTOR suggested the point in dispute could be met by inserting words to the effect that workmen whose terms of employment were subject to the National Joint Industrial Council agreement should continue to be subject to that agreement.

Mr. AULD, for the Corporation, said that would satisfy him.

Mr. JACKSON said he felt a difficulty in agreeing because he did not know where it would lead him in the future.

The INSPECTOR said he frankly did not like the addition of the word "servant" to "officers," as it introduced a word which did not appear in the Local Government Act of 1933, and to use it in this Order would merely lead to discussion as to who was an officer and who was a servant.

Mr. JACKSON agreed there had always been a difficulty in differentiating between "officers" and "servants."

Mr. AULD submitted that as the N.A.L.G.O. was not concerned with the workmen, they had no *locus standi* to appear at this enquiry at all.

The INSPECTOR suggested that there might be an adjournment in order to try to come to an agreement.

Mr. JACKSON said it would be a little while before he could consult his clients, as they were evacuated in the country.

Mr. AULD pointed out to the Inspector that this matter had already been delayed a considerable time and the coke oven suppliers, who could not understand the reasons, might well withdraw their offer, as they were becoming very upset at the delay.

Eventually Mr. Jackson agreed to the workmen being provided for under the National Joint Industrial Council Agreement, but urged the necessity for adding the word "servants" to "officers" in relation to the compensation to the salaried staffs. After considerable discussion, a form of wording of the Compensation Clauses in the Draft Order was agreed, and the Inspector intimated he would report to the Board of Trade to that effect.

Manchester District Association of Gas Engineers

(*Concluded from Vol. 239, p. 509*)

Mr. **Norman Hudson** (Mirfield) said he would like the Ministry of Fuel and Power to make representations to the appropriate Department in London to stop certain medical practitioners advising as to the type of employment a man should follow. He had two cases in mind at the moment; one was a key-man and the other was a labourer. They had gone to their doctors claiming to be ill. They brought back medical certificates to the office of the Company, in very long medical language. In one case this was followed by a recommendation for a change in employment, and in the other case there was recommended a change because of the heavy type of work the man was called upon to do. He thought there should be some means to stop medical practitioners recommending the type of employment a man should follow, when the Government had gone to the trouble of appointing National Service liaison officers in every town to do that very job.

Mr. **Ronca:** If you doubt the *bona fides* of the first doctor's opinion you can get a second doctor's opinion on the case; but to prevent it, the answer is "No."

Mr. **N. Hudson:** I am not satisfied with the reply.

Mr. **Ronca:** Do you seriously suggest that some Department should have the power to say to a doctor, "You shall not put this or that on a certificate"?

Mr. **Hudson:** I do.

Mr. **Ronca:** The real answer to your question is, I think, that you can call for a second opinion.

Mr. **H. B. Holliday** (Wallasey): We have had something similar in our Department. We thought it wise to call in a medical officer of our own, and in a short time the practice ceased.

Mr. **W. Hodkinson** (United Kingdom Gas Corporation): Do the Ministry of Fuel and Power take into account the fact that many undertakings which, on the face of the balance-sheet, are doing well are, in fact, building up a hidden debit in respect of renewals which are accruing, but which cannot be carried out due to lack of labour and materials?

Mr. **R. Walker** (Manchester) said he felt the Essential Work Order was not operating to their benefit. They felt they were powerless often to see that the regulations were carried out, because the Ministry of Labour could not concentrate on to the requirements of the Gas Industry. Mr. Walker remarked that he would like Mr. Ronca to refer in more detail to the work his team was doing in making a thorough examination of the post-war economic position. Could they have some pronouncement, upon the authority of the Ministry, based upon a definite study of the general economic post-war conditions which were likely to occur? They were inclined, too much at times, to listen to the sunshine talk of post-war conditions, and think the Government was going to provide manna from heaven and find everybody a job and then pay the piper.

Mr. **Ronca:** If, by "studying," you mean are we at first hand collecting all the statistics, including those other than on gas matters, the answer is "No." There will be specialists who will do that, and we will pay regard to any of their findings. Mr. Hodkinson had said they should look at the balance-sheet to find out some specific details. If they looked at balance-sheets in order to find out specific details then we should get nothing done very quickly.

Mr. **Hodkinson:** Do you accept the principle that undertakings are building up a debit?

Mr. **Ronca:** It is not a principle. We know that it is happening.

Mr. **Hodkinson:** Are we going to raise our prices in order to meet those costs?

Mr. **Ronca:** I am not a prophet.

Mr. **J. H. Brearley** (Harrogate) moved and Mr. **A. L. Holton** (Manchester) seconded a vote of thanks to Mr. Ronca, who replied.

Members of The Institution of Gas Engineers are invited to attend a meeting of the Institution of Structural Engineers to be held at 11, Upper Belgrave Street, London, S.W. 1, on Oct. 22 at 5.30, at which a Paper entitled "The Place of the Engineer in Post-War Planning and Reconstruction" will be presented by Mr. Harry Jackson (Vice-President). Cards of admission may be obtained on application to the Secretary of The Institution of Gas Engineers, 1, Grosvenor Place, S.W. 1.

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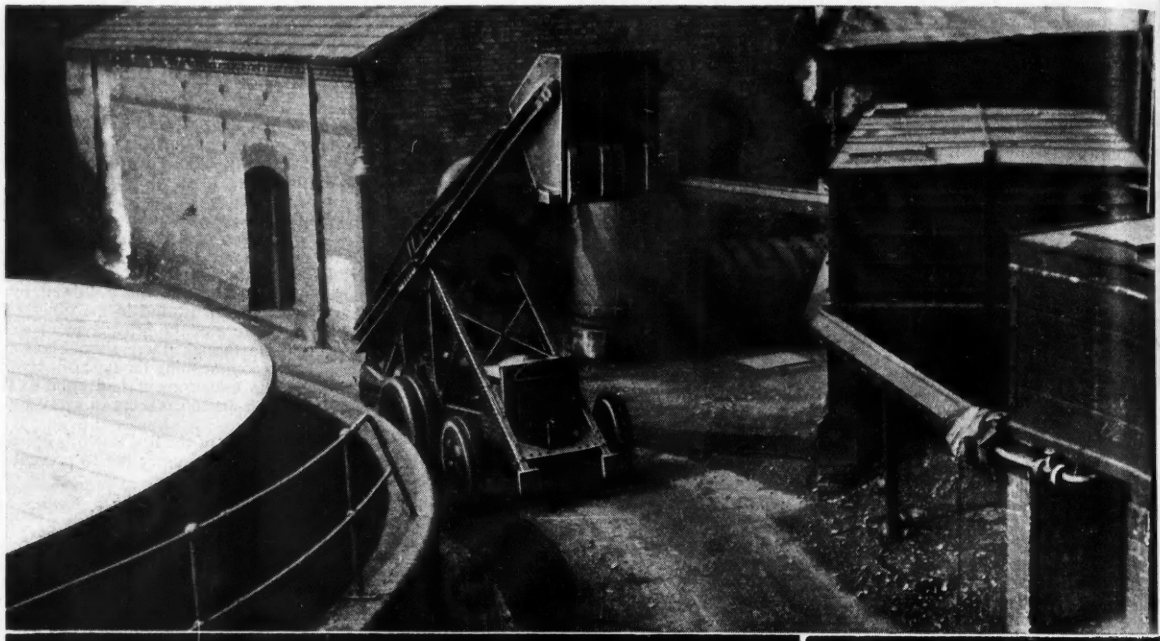
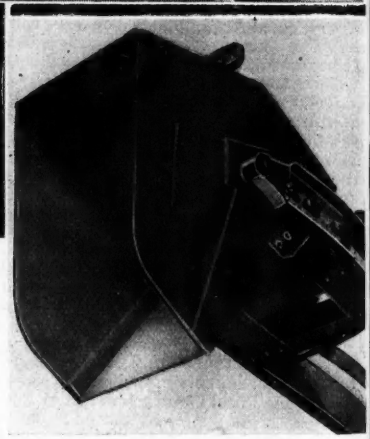


than at a GAS WORKS



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Gas Products Prices

The London Market Oct. 5.

Apart from the fact that 95/160 Solvent Naphtha is to-day about 2s. 6d. per gallon naked *ex* Sellers' Works, there are no changes in the prices of Coal Tar Products in the London Market.

The Provinces Oct. 5.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 90's, 1s. 10d., pure, 2s. 5d. (controlled by the Control of Toluene No. 2 Order, July 3, 1941, which fixes the maximum price at which this material may be sold). Coal tar, crude naphtha, in bulk, North, 1s. to 1s. 4d. according to quality. Solvent naphtha, naked, North, 2s. 2d. to 2s. 6d. Heavy naphtha, North, 1s. 10d. to 1s. 11d. Carbolic acid, 60's, controlled by the Coal Tar Acids Prices (Inland) Order, 1942, operative from May 1. Naphthalene, controlled by the Naphthalene prices (Inland) Order, 1942, dated April 15, 1942, and operative from May 1, 1942, £19 to £19 10s.—bags free. Anthracene, controlled by the Anthracene Prices (Inland) Order, 1942, operative from May 1. Filtered heavy oil (min. gr. 1,080), 7½d. to 8d. Creosote oil has been generally controlled as to direction and price for some time past. Current value—fuel grades 5d. to 5¼d; timber preservation and other purposes 4¼d. to 6d. These prices apply as from May 13.

*In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

Tar Products in Scotland Oct. 3.

No change can be recorded with demand continuing strong. Refined tar controlled. Value is 4½d. per gallon *ex* Works, naked. Creosote oil: Specification oil, 6¾d. to 7d.; low gravity, 7¼d. to 7¼d.; neutral oil, 6¾d. to 7d. per gallon; all *ex* Works in bulk. Cresylic acid continues active at 3s. 6d. to 4s. 6d. per gallon *ex* Works, naked, according to quality. Crude naphtha 6½d. to 7d. Solvent naphtha: 90/160 grade, 2s. 3d. to 2s. 6d., and 90/190 Heavy naphtha, 1s. 9d. to 2s. per gallon. Pyridine: 90/160 grade, 13s., and 90/140 grade, 15s. per gallon.

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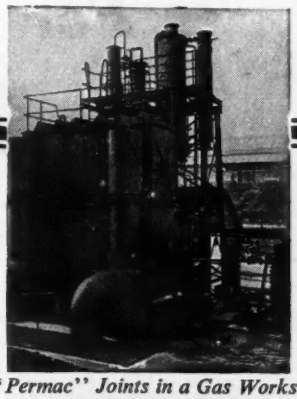
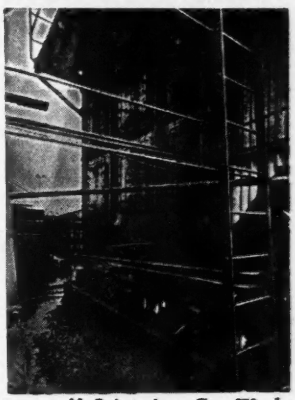
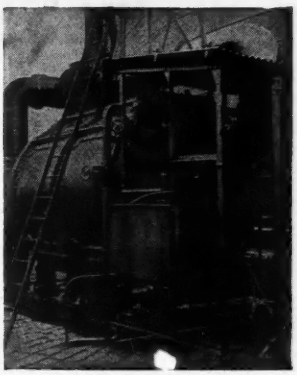


"Permac" Joints in a Gas Works.



"Permac" Joints in a Gas Works.



"Permac" Joints in a Gas Works.

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GAS STOCKS AND SHARES

Stock Markets were again fairly cheerful last week and home rails and industrials attracted the most attention, but the volume of business was limited owing to the shortage of stock. Conditions in the Gas Market were somewhat similar although more ordinary and preference stock than usual was available. There were no special features, but it will be seen that Gas Light units, being well supported, closed 3d. higher, while both Imperial Continental and Wandsworth ordinaries rose on the week.

It is interesting to note that whereas in the case of those companies whose stocks are quoted both in the Official List and in their local Provincial List the price in the latter used to be anything from 2 to 4 points higher than in London, at the present time there is very little difference between the two; in fact, Newcastle units are now quoted slightly higher in London than at Newcastle.

The following price changes occurred during the week:

OFFICIAL LIST

Bournemouth 7 p.c. max.	135—140	+1	
British Gas Light Ord. (x.d.)	75—80	Sept. 28	
Colonial Gas Association Ord. (x.d.)	½—¾	"	
Ditto 8 p.c. Pref. (x.d.)	¾—⅞	"	
Gas Light Units	13/3—14/3	+-/3d.	
Imperial Continental	65—70	+1	
South-Eastern Gas Corporation Ord.	15/6—16/6	—	
United Kingdom Gas Corporation 4½ p.c. 1st Pref.	17/6—19/6	+-/6d.	
Wandsworth Ord.	81—84	+1	
Ditto 4 p.c. Pref.	79—84	+1	

PROVINCIAL LIST

Romford 4 p.c. Deb. (x.d.)	90—95	Sept. 30
Sunderland 6 p.c. max. (x.d.)	111½—112½	Sept. 21

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Quotations on the London and Provincial Stock Exchanges

OFFICIAL LIST

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Oct. 2.
1,767,439	Mar. 9	5	5	Alliance & Dublin Ord. ...	93—98
374,000	June 29	4	4	Do. 4 p.c. Deb.	100—105
972,345	May 11	5	5	Assed. Gas & Water U'd'ts Ord.	16/9—17/9
500,000	"	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	16/—18/-
535,545	"	4	4	Do. 4 p.c. Red. Cum Pref.	15/6—17/6
341,966	"	4	4	Do. 4 p.c. Irred. Cum. Pref.	13 —15/-
561,370	Aug. 24	7	7	Barnet Ord. 7 p.c.	133—138
300,000	May 18	1/4⅜	1/9⅜	Bombay, Ltd.	18/6—20/6
690,407	Aug. 17	7	7	Bournemouth 7 p.c.max. ...	135—140
362,025	June 15	4	4	Do. 4 p.c. Deb. ...	98—103
659,955	Sept. 7	2½	2½	Brighton, &c., 5 p.c. Con. ...	72—77
855,000	" 28	6	6	Brit. Gas Light Ord.	75—80*
545,000	June 29	5½	5½	Do. 5½ p.c. 'B' Cum. Pref.	105—115
120,000	June 15	4	4	Do. 4 p.c. Red. Deb.	80—85
10,000	Nov. 6 '33	6	4	Cape Town, Ltd., 4½ p.c. Cu. Pf.	1¼—2½
626,860	July 13	6	6	Cardiff Con. Ord.	100—105
24,500	June 8	7	7	Colombo 7 p.c. Pref.	19/—21/-
764,169	Sept. 28	-/9.56	-/9.56	Colonial Gas Assn. Ltd. Ord. ..	⅛—¼
400,000	"	1/3.298	1/3.298	Do 8 p.c. Pref. ...	⅜—½*
1,748,935	July 22 '40	2	3	Commercial Ord.	35—40
620,000	June 8	3	3	Do. 3 p.c. Deb.	58—63
286,344	Aug. 17	5	5	Do. 5 p.c. Deb.	95—100
807,560	" 24	6	6	Croydon sliding scale	108—113
644,590	"	5	5	Do. max. div.	83—88
620,385	June 29	5	5	Do. 5 p.c. Perp. Deb. ...	109—114
179,500	Aug. 17	5	5	East Surrey 'B,' 5 p.c.	80—85
176,461	June 29	5	5	Do. 5 p.c. Deb. (Irred.)...	107—112
250,000	July 13	4	6	Gas Consolidation Ord. 'B' ...	15/—17/-
250,000	May 11	4	4	Do. 4 p.c. Red. Cum. Pref.	14/6—16/6
19,122,910	July 29 '40	3⅜	4½	Gas Light & Coke Ord. ...	13/3—14/3a
2,600,000	"	3½	3½	Do. 3½ p.c. max.	52—57
4,477,106	"	4	4	Do. 4 p.c. Con. Pref. ...	66—71
2,993,000	July 8 '40	3¾	3¾	Do. 3¾ p.c. Red. Pref. ...	72—77
8,602,497	June 1	3	3	Do. 3 p.c. Con. Deb. ...	76—81
3,642,770	"	5	5	Do. 5 p.c. Red. Deb. ...	104—108
3,500,000	"	4½	4½	Do. 4½ p.c. Red. Deb. ...	103—107
700,000	Sept. 14	3½	3½	Do. 3½ Red. Deb. ...	92—95
5,600,000	May 13 '40	4	8	Imperial Continental Cap. ...	65—70
43,820	July 27	3½	3½	Do. 3½ p.c. Red. Deb. ...	90—95
231,978	Aug. 24	5	5	M.S. Utility 'C' Cons.	75—80
918,657	"	4	4	4 p.c. Cons. Pref.	78—83
675,000	May 4	†4	†4	Montevideo, Ltd.	82—87
300,000	April 27	9	7	Oriental, Ltd.	80—90
368,537	June 15	3½	2½†	Plymouth & Stonehouse 5 p.c.	65—70
621,667	Aug. 17	7½	7½	Portsmouth & Gosport Cons.	96—101
648,999	Sept. 7	1/1½	1/1½	Severn Val. Gas Cor. Ld. Ord.	17/6—19/6
597,972	"	4½	4½	Do. 4½ p.c. Cum. Pref. ...	16/6—18/6
2,528,714	Aug. 24	1/-	7½	South East'n Gas Cn. Ld. Ord.	15/6—16/6
1,000,000	"	-/10½	-/10½	Do. 4½ p.c. Red. Cum. Pref.	16/—18/-
1,068,869	"	4	4	Do 4 p.c. Irred. Cum. Pref.	13/6—15/6
6,709,895	Aug. 5 '40	4	4	South Met. Ord.	57—62
1,135,812	"	6	6	Do. 6 p.c. Irred. Pref. ...	82—87
850,000	"	4	4	Do. 4 p.c. Irred. Pref. ...	62—67
1,895,445	June 29	3	3	Do. 3 p.c. Perp. Deb. ...	76—81
1,000,000	July 13	5	5	Do. 5 p.c. Red. Deb. ...	100—105
1,543,795	Aug. 4	4	4	South Suburban Ord. 5 p.c ...	78—83
512,825	"	5	5	Do. 5 p.c. Perp. Pref. ...	97—102
800,000	"	4	4	Do. 4 p.c. Perp. Pref. ...	76—81
250,000	"	3¾	3¾	Do. 3¾ p.c. Red. Pref. ...	90—95
888,587	June 15	3	5	Do. 5 p.c. Perp. Deb. ...	109—114
750,541	Aug. 17	2	6	Southampton Ord.	72—77
350,000	"	5½	5½	Swansea 5½ p.c. Red. Pref. ...	95—100
1,076,495	"	5	5	Tottenham & District Ord. ...	88—93
338,555	"	5	5	Do. 5 p.c. Pref.	95—100
453,380	June 8	4	4	Do. 4 p.c. Perp. Deb. ...	90—95
1,247,505	" 29	4	‡4	U. Kingdom Gas Cor. Ord. ...	15/6—17/6
1,085,952	May 18	4½	4½	Do. 4½ p.c. 1st Cum. Pref. ...	17/6—19/6
772,709	"	4	4	Do. 4 p.c. 1st Red. Cum.Pref.	16-/—18/-
745,263	June 22	4½	4½	Do. 4½ p.c. 2nd Non.Cum. Pf.	14/—16/-
1,200,000	Sept. 14	3½	3½	Do. 3½ p.c. Red. Deb. ...	90—95
380,606	Aug. 24	6⅜	6⅜	Uxbridge, &c., 5 p.c.	102—107
1,371,138	" 10	4	4	Wandsworth Consolidated ...	81—86
2,525,768	"	4	4	Do. 4 p.c. Pref.	79—84
1,343,964	June 15	5	5	Do. 5 p.c. Deb.	109—114
383,745	"	4	4	Do. 4 p.c. Deb.	90—95
558,342	Aug. 10	5	5	Watford & St. Albans Ord. ...	98—103
300,000	June 8	3½	3½	Do. 3½ p.c. Red. Deb. ...	84—89

SUPPLEMENTARY LIST

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Oct. 2.
351,685	June 15	5	5	Brighton, &c., 5 p.c. Perp. Deb	107—112
415,250	"	4	4	Bristol Gas Co., 4 p.c. New Deb.	98—103
140,205	Aug. 4	7	7	Cambridge, &c., 7 p.c. Cons. 'B'	130—140
295,932	Aug. 17	5	5	Cheltenham, 5 p.c. Cons.Ord....	95—100
42,500	June 15	4	4	Do. 4 p.c. Perp. Deb....	90—95
150,000	Aug. 24	4	4	Croydon Gas, 4 p.c. Pref. (Irr.)	78—83
130,000	June 29	4	4	Do. 4 p.c. Deb. ...	95—100
146,700	Aug. 17	5½	5½	East Surrey, 5½ p.c. Pref. 'A' ...	95—100
53,220	"	9	6	Do. 6 p.c. Cum. Pref. ...	115—120
...	Aug. 19 '40	6	4	Eastbourne, 'B' 3½ p.c.... ..	37—42
239,135	July 13	5	5	Gas Consolidation 'A' Ord. (£1)	12/6—14/6
156,600	Aug. 17	5	5	Hampton C't, 5 p.c. Cons. Ord.	95 —100
18,000	Dec. 29	3½	3½	Malta & Med'n., 7 p.c. 1st Pref.	45—55
10,845	June 30'41	3½	3½	Do. 7½ p.c. 2nd Pref.	35—45
50,000	Aug. 24	£5 4 6	£5 4 6	Mid. South. Util., 'A' Cons. 5 p.c.	70—80
65,000	"	5	5	North Middlesex, 5 p.c. Pref. ...	90—95
70,000	Sept. 14	5	5	Plymouth & Stone., 5 p.c. Deb.	103—108
76,501	June 29	4	4	Reading, 4 p.c. Perp. Deb. ...	90—95
74,777	Sept. 30	4	4	Romford, 4 p.c. Debs. (Reg.) ...	90—95*
21,000	June 15	5	5	Slough, 5 p.c. Perp. Deb. ...	108—113
211,740	"	5	5	Southampton, 5 p.c. Red. Deb.	95—100
363,575	July 1	5	5	Tottenham, 5 p.c. Reg. Red. Mt.	99—102
202,019	Aug. 24	7⅛	7⅛	Tunbridge Wells, 4 p.c. Scale ...	119—124
135,257	June 15	5	5	Uxbridge &c., 5 p.c. Perp. Deb.	107—112

PROVINCIAL EXCHANGES

					Quotations Sept. 25.
804,948	Mar. 2	5	5	Bath Cons.	98—101
122,577	Aug. 17	6	5	Blyth 5 p.c Ord.	100—105
1,667,250	July 13	5	5	Bristol, 5 p.c. max.	107—109
120,420	June 15	4	4	Do. 1st 4 p.c. Deb.	101—103
415,250	"	4	4	Do. 2nd 4 p.c. Deb.	99—101
328,790	"	5	5	Do. 5 p.c. Deb.	113—118
157,150	Aug. 4	6½	5	Chester 5 p.c. Ord.	96—99
92,500	June 15	4	4	Do. 4 p.c. Pref.	79—81
36,430	"	3½	3½	Do. 3½ p.c. Deb.	78—82
41,890	"	4	4	Do. 4 p.c. Red. Deb. ...	98—100
542,270	Aug. 17	9	6	Derby Cons.	115—120
55,000	June 15	4	4	Do. 4 p.c. Deb.	95—100
10,000	Aug 10	10	10	Great Grimsby 'A' Ord. ...	155—165
6,500	"	10	10	Do. 'B' Ord. ...	155—165
79,000	"	10	10	Do. 'C' Ord. ...	145—155
732,000	Aug. 31	4	4	Hartlepool G. & W. Cn. & New	71—73
2,167,410	" 10	6	5	Liverpool 5 p.c. Ord.	100—102
245,500	June 15	5	5	Do. 5 p.c. Red. Pref. ...	100—102
306,083	July 15	4	4	Do. 4 p.c. Deb.	98—100
20,000	June 22	5	5	Long Eaton 5 p.c. Pref.	9—11
80,000	"	5	5	Do. 5 p.c. Deb.	95—100
2,430,267	Aug. 4	5½	5	Newcastle and Gateshead Con.	19/6—20/-a
682,856	"	4	4	Do. 4 p.c. Pref.	92½—93½
776,706	June 29	3½	3½	Do. 3½ p.c. Deb.	89½—90½
277,285	May 4	5	5	Do. 5 p.c. Deb. '43 ...	99—101
274,000	March 17	5	5	Newport (Mon.) Ord.	86—89
13,200	Sept. 16	8⅝	7	Pontyp'l Gas & W. 10 p.c. 'A'	11½—12½
13,600	"	6	5	Do. 7 p.c. 'B'	9½—10½
40,000	"	5	6	Do. 7 p.c. 'C'	9½—10½
106,280	Aug. 10	10	10	Preston 'A' 10 p.c.	150—160
188,219	"	7	7	Do. 'B' 7 p.c.	109—119
1,806,339	Aug. 24	6½	6½	Sheffield Cons.	128—131
95,000	July 6	4	4	Do. 4 p.c. Deb.	98—100
332,351	Sept. 21	6	6	Sunderland 6 p.c. max. ...	111½—112½
192,150	Aug. 10	5	5	Weston-super-Mare Cons. ...	93—97
64,338	June 29	4	4	Do. 4 p.c. Deb.	84—89
33,340	"	7½	7½	Do. 7½ p.c. Deb.	138—143

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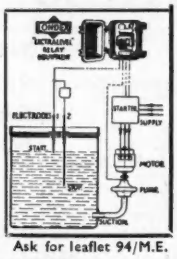

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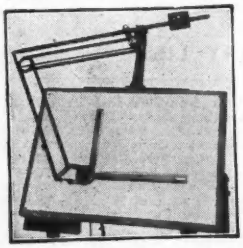

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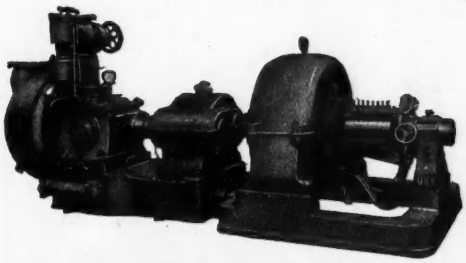

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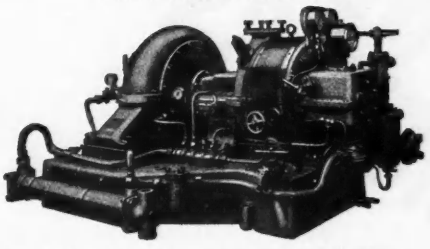

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Brotherhood plant for Gas Works also includes Reciprocating Boosters, Water Cooling Towers, Air and Gas Compressors for all pressures and capacities.

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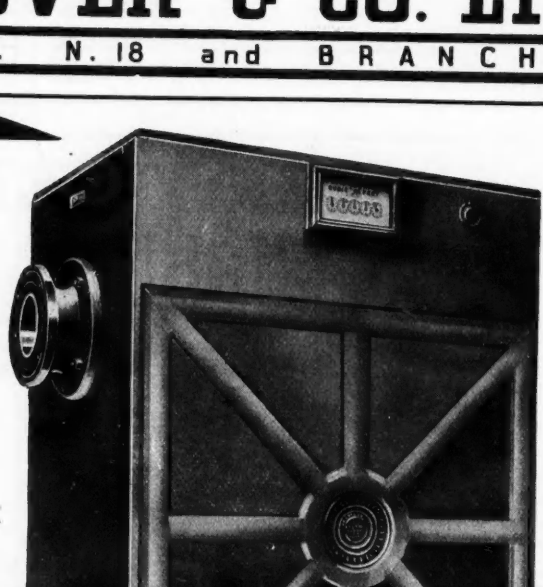

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